

WHAT IS CLAIMED IS:

1. An exposure apparatus, comprising:
an illumination optical system for
illuminating a pattern of a reticle with laser light
5 outputted from a continuous emission laser;
a projection optical system for
projecting the illuminated pattern onto a subject
to be exposed; and
an interferometer operable while using
10 laser light outputted from said continuous
emission laser.
2. An apparatus according to Claim 1,
wherein said interferometer includes a reflection
15 member disposed on a stage for holding the subject.
3. An apparatus according to Claim 1,
wherein said interferometer is operable to form an
interference fringe for measurement of the
20 wavefront aberration of said projection optical
system.
4. An apparatus according to Claim 1,
wherein said continuous emission laser is a
25 continuous emission excimer laser having an
emission wavelength of 193 nm or 157 nm.

5. An apparatus according to Claim 1,
wherein said interferometer is of Fezeau type.

6. An apparatus according to Claim 1,
5 further comprising a stabilization mechanism for
stabilizing the emission wavelength of said
continuous emission laser.

7. An apparatus according to Claim 1,
10 further comprising a semi-transmission mirror
disposed between said continuous emission laser
and said illumination optical system, for
directing a portion of the laser light outputted
from said continuous emission laser to said
15 interferometer.

8. An apparatus according to Claim 7,
further comprising an optical system operable to
transform laser light outputted from said
20 continuous emission laser into incoherent light
and also to direct the same to the reticle, wherein
said semi-transmission mirror is disposed between
said continuous emission laser and said optical
system, and wherein said semi-transmission mirror
25 directs laser light not transformed into coherent
light to said interferometer.

9. An apparatus according to Claim 1,
further comprising an optical path switching
mirror for interchanging the path of the laser light
outputted from said continuous emission laser,
5 between a light path directed to said illumination
optical system and a light path directed to said
interferometer.

10. An apparatus according to Claim 9,
10 further comprising an optical system operable to
transform laser light outputted from said
continuous emission laser into incoherent light
and also to direct the same to the reticle, wherein
said optical path switching mirror is disposed
15 between said continuous emission laser and said
optical system, and wherein said optical path
switching mirror directs laser light not
transformed into coherent light to said
interferometer.

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11. An apparatus according to Claim 1,
further comprising a photoelectric converter for
taking an image of an interference fringe produced
by said interferometer, and an operation unit for
25 analyzing an output of said photoelectric
converter to control said projection optical
system.

12. An apparatus according to Claim 1,
further comprising a pulse emission laser for
injecting laser light of a predetermined
5 wavelength into said continuous emission laser.

13. A device manufacturing method,
comprising the steps of:

10 exposing a wafer to a pattern by use of
an exposure apparatus as recited in Claim 1; and
developing the exposed wafer.